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10/816,100

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Naoto Shimada

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EXAMINER

CHOW, YUK

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/816,100	<b>Applicant(s)</b> SHIMADA, NAOTO	
	<b>Examiner</b> YUK CHOW	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7, 14, 15, 17, 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoshino et al (Pub No.: US2001/0043113 A1).

As to claim 1, Hoshino discloses a driving apparatus which drives a load by switching driving conditions with time, comprising:

a load driving section (Fig. 5(2)) configured to drive the load by supplying a voltage (Fig. 5(V<sub>o</sub>)) and a current (Fig. 5(6a));

a switching section (Fig. 5(43, Q1, Q2, Q3)) configured to switch conditions of the load driven by the load driving section; and

a control section (Fig. 5(4)) configured to obtain load characteristic information [0038] after switching by the switching section before the switching, and to set a voltage (Fig. 5(V<sub>REF</sub>)) and a current by which the load driving section drives the load to a voltage and a current corresponding to the load characteristic information after the switching in synchronization with timing of the switching ([0040]-[0046]).

As to claim 2, Hoshino discloses an apparatus according to claim 1, wherein:  
the load comprises a plurality of loads (Fig. 5(15a,b); and

the switching section (Fig. 5(43, Q1,Q2,Q3)) switches the plurality of loads with time (see [0054]-[0056]).

As to claim 3, Hoshino discloses an apparatus according to claim 1, wherein:  
the load comprises one load (Fig. 2(15)); and  
the switching section (Fig. 2(33-36)) switches one load between presence and nonpresence ([0047]-[0050]).

As to claim 4, Hoshino discloses an apparatus according to claim 1, wherein the load is an LED (Fig. 1(15)).

As to claim 5, Hoshino discloses an apparatus according to claim 4, wherein the characteristic information contains a  $V_f$  ([0018] line 4) value when a predetermined current amount is supplied to the LED [0039].

As to claim 6, Hoshino discloses an apparatus according to claim 4, wherein the characteristic information contains an emission amount ([0018] line 5 (variation of luminance)) when a predetermined current amount is supplied to the LED.

As to claim 7, Hoshino discloses an apparatus according to claim 1, further comprising: a detection section (Fig. 1(Rs)) configured to detect the characteristic information [0038].

As to claim 14, Hoshino discloses a lighting apparatus which lights (illuminates see [0019]) a display device displayed by a video signal, comprising:

a driving apparatus (Fig. 5) which drives a load by switching driving conditions with time (switching frequency (Abstract)), including:

a load driving section (Fig. 5(2)) configured to drive the load by supplying a voltage and a current;

a switching section (Fig. 5(43, Q1,Q2,Q3)) configured to switch conditions of the load driven by the load driving section; and

a control section (Fig. 5(4)) configured to obtain load characteristic information [0038] after switching by the switching section before the switching, and to set a voltage and a current by which the load driving section drives the load to a voltage (Fig. 5(Vo)) and a current (Fig. 5(6a)) corresponding to the load characteristic information after the switching in synchronization with timing of the switching (see [0040]-[0046]); and

a light emitter (Fig. 5(15a, 15b)) configured as a load driven by the load driving section to light the display device, wherein the switching section (Fig. 5(43, Q1,Q2,Q3)) selects the light emitter driven in synchronization with timing of the video signal ([0057]-[0061]).

As to claim 15, Hoshino discloses an apparatus according to claim 14, wherein the light emitter includes an LED (Fig. 1(15)).

As to claim 17, Hoshino discloses a display apparatus (display device [0019] line 2) comprising:

a display device configured to display a video by a video signal; and a lighting (LED for use to illuminate [0019]) apparatus which lights the display device, including:

a driving apparatus (Fig. 5) which drives a load by switching driving conditions with time (switching frequency (Abstract)), having:

a load driving section (Fig. 5(2)) configured to drive the load by supplying a voltage and a current;

a switching section (Fig. 5(43, Q1,Q2,Q3)) configured to switch conditions of the load driven by the load driving section; and

a control section (Fig. 5(4)) configured to obtain load characteristic information [0038] after switching by the switching section before the switching, and to set a voltage (Fig. 5( $V_{REF}$ )) and a current by which the load driving section drives the load to a voltage and a current corresponding to the load characteristic information after the switching in synchronization with timing of the switching (see [0040]-[0046]); and

a light emitter (Fig. 5(15a)) configured as a load driven by the load driving section to light the display device, wherein the switching section (Fig. 5(43, Q1,Q2,Q3)) selects the light emitter driven in synchronization with timing of the video signal ([0057]-[0061]).

As to claim 20, Hoshino discloses a driving apparatus which drives a load by switching driving conditions with time, comprising:

load driving means (Fig. 5(2)) for driving the load by supplying a voltage and a current;

switching means (Fig. 5(43, Q1,Q2,Q3)) for switching conditions of the load driven by the load driving means; and

control means (Fig. 5(4)) for obtaining load characteristic information [0038] after switching by the switching means before the switching, and setting a voltage (Fig. 5( $V_{REF}$ )) and a current by which the load driving means drives the load to a voltage (Fig.

5(V<sub>0</sub>)) and a current (Fig. 5(6a)) corresponding to the load characteristic information after the switching in synchronization with timing of the switching ([0040]-[0046]).

As to claim 21, Hoshino discloses a lighting apparatus which lights (illuminates see [0019]) a display device displayed by a video signal, comprising:

a driving apparatus (Fig. 5) which drives a load by switching driving conditions with time (switching frequency (Abstract)), including:

load driving means (Fig. 5(2)) for driving the load by supplying a voltage and a current;

switching means (Fig. 5(43, Q1, Q2, Q3)) for switching conditions of the load driven by the load driving means;

and control means (Fig. 5(4)) for obtaining load characteristic information after switching by the switching means before the switching, and setting a voltage (Fig. 5(V<sub>REF</sub>)) and a current by which the load driving means drives the load to a voltage (Fig. 5(V<sub>0</sub>)) and a current (Fig. 5(6a)) corresponding to the load characteristic information [0038] after the switching in synchronization with timing of the switching ([0040]-[0046]); and

light emitting means (Fig. 5(15a, 15b)), as a load driven by the load driving means, for lighting the display device, wherein the switching means (Fig. 5(43, Q1, Q2, Q3)) selects the light emitting means driven in synchronization with timing of the video signal ([0057]-[0061]).

As to claim 22, Hoshino discloses a display apparatus comprising:

a display device configured to display a video by a video signal (see [0018]); and

a lighting apparatus (LED for use to illuminate [0019]) which lights the display device, including:

a driving apparatus (Fig. 5) which drives a load (Fig. 5(15a)) by switching driving conditions with time (switching frequency (Abstract)), including:

load driving means (Fig. 5(2)) for driving the load by supplying a voltage (Fig. 5(V<sub>0</sub>)) and a current (Fig. 5(6a));

switching means (Fig. 5(43, Q1,Q2,Q3)) for switching conditions of the load driven by the load driving means; and

control means (Fig. 5(4)) for obtaining load characteristic information [0038] after switching by the switching means before the switching, and setting a voltage (Fig. 5(V<sub>REF</sub>)) and a current by which the load driving means drives the load to a voltage and a current corresponding to the load characteristic information after the switching in synchronization with timing of the switching ([0040]-[0046]); and

light emitting means (Fig. 5(15a)), as a load driven by the load driving means, for lighting the display device, wherein the switching means (Fig. 5(43, Q1,Q2,Q3)) selects the light emitting means driven in synchronization with timing of the video signal ([0057]-[0061]).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.



4. Claims 8-13, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshino et al (Pub No.: US2001/0043113 A1) in view of Inoue et al. (Pub. No.: US 2003/0142047 A1).

As to claim 8, Hoshino discloses an apparatus according to claim 7, wherein the load is an LED (Fig. 1(15)).

However, Hoshino does not teach the detection section includes a light sensor configured to detect a light emitted from the LED.

Inoue teaches a photo-detecting element for detecting light emission of LED (Abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate a light sensor of Inoue's into LED driving circuit of Hoshino's, because it's possible to detect a variation in the threshold voltage of the transistor with a simple circuit as suggests by Inoue [0025].

As to claim 9, Inoue discloses a control section has a characteristic memory section configured to store the characteristic information [0026].

As to claim 10, Inoue discloses an apparatus according to claim 9, wherein the load is an LED, and the characteristic memory section stores a predetermined emission amount of the LED corresponding to a current value supplied to the LED [0027].

As to claim 11, Inoue discloses a control section sets a current value and a voltage value of the load driving section at different timings [0060].

As to claim 12, Inoue discloses a control section sets a voltage value of the load driving section before predetermined time of the switching timing (Fig. 6) if the voltage

value of the load driving section after the switching timing is larger than that of the same before the switching timing ([0071]-[0076]).

As to claim 13, Inoue discloses an apparatus according to claim 12, wherein the predetermined time corresponds to power source response time [0072].

As to claim 16, Inoue discloses an apparatus according to claim 14, wherein the timing of the video signal is a video synchronous signal ([0071]-[0076]).

5. Claims 18, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshino et al (Pub No.: US2001/0043113 A1) in view of Koga et al. (US Patent 6,129,437).

As to claim 18, Hoshino discloses an apparatus according to claim 17 above.

However, Hoshino does not teach the display device includes an LCD.

Koga teaches an image display apparatus use for a LCD (Col. 1 lines 20-22).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use display driving circuit of Hoshino's for a projection type color LCD display, because it is well known that conventional LCD display has better color and it's an improvement over LED.

As to claim 19, Hoshino discloses an apparatus according to claim 17 above, Koga also teaches a display device includes a DMD (trademark) (Col. 1 lines 42-47).

### ***Response to Arguments***

6. Applicant's arguments filed on 12/27/2007 have been fully considered but they are not persuasive.

Regarding independent claims 1, 14, 17, 20-22, applicant argues Hoshino does not teach "load driving section/means", "switching section/means".

However, examiner respectfully disagrees. According to current claimed invention, one ordinary skill in the art can reasonably interpret "load driving means" as a circuit that drives load, such as the booster IC circuit (Fig. 5(2)) in Hoshino.

"switching means" can also be interpreted as a device which can be turned on and off, just like the transistors Q1, Q2, Q3 and transistor 43 in Fig. 5 of Hoshino.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUK CHOW whose telephone number is (571)270-1544. The examiner can normally be reached on 8-6 M-TH E.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on 571 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y. C./  
Art Unit 2629

/Amare Mengistu/

Supervisory Patent Examiner, Art Unit 2629